Effectiveness of concrete surface treatment materials in reducing chloride-induced reinforcement corrosion

Ibrahim, M., Al-Gahtani, A.S., Maslehuddin, M., Almusallam, A.A.

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Abstract: The effectiveness of concrete surface treatment materials, such as silane, siloxane, acrylic coating, etc., in reducing chloride-induced reinforcement corrosion was investigated. Two sets of reinforced concrete specimens were cast. In the first set, reinforcement corrosion was accelerated by impressing an anodic potential of 2 V and the time to cracking was monitored. The second set of concrete specimens were immersed in the chloride solution and reinforcement corrosion was monitored by measuring corrosion potentials and corrosion current density. Among the surface treatment materials investigated, silane, silane/siloxane with top coat and acrylic coating were effective in reducing the rate of reinforcement corrosion. Furthermore, the data developed in this investigation indicated that the performance of coatings can be quickly evaluated using impressed current technique.